

Serial Number: 09/899,476 **ENTERED** CRF Errors Corrected by the STIC Systems Branch  
CRF Processing Date: 7/19/2001  
Edited by: AK Verified by: AK (STIC staff)

☐ Changed a tile from non-ASCII to ASCII

☐ Changed the margins in cases where the sequence text was "wrapped" down to the next line.

☐ Edited a format error in the Current Application Data section, specifically:

☐ Edited the Current Application Data section with the actual current number. The number inputted by the applicant was ☐ the prior application data; or ☐ other \_\_\_\_\_

☐ Added the mandatory heading and subheadings for "Current Application Data".

☐ Edited the "Number of Sequences" field. The applicant spelled out a number instead of using an integer.

☐ Changed the spelling of a mandatory field (the headings or subheadings), specifically:

☐ Corrected the SEQ ID NO when obviously incorrect. The sequence numbers that were edited were:

☐ Inserted or corrected a nucleic number at the end of a nucleic line. SEQ ID NO's edited:

☐ Corrected subheading placement. All responses must be on the same line as each subheading. If the applicant placed a response below the subheading, this was moved to its appropriate place.

☐ Inserted colons after headings/subheadings. Headings edited included:

☐ Deleted extra, invalid, headings used by an applicant, specifically:

☐ Deleted: ☐ non-ASCII "garbage" at the beginning/end of files; ☐ secretary initials/tile name at end of file;  
☐ page numbers throughout text; ☐ other invalid text, such as \_\_\_\_\_

☐ Inserted mandatory headings, specifically:

☐ Corrected an obvious error in the response, specifically:

☐ Edited identifiers where upper case is used but lower case is required, or vice versa.

☐ Corrected an error in the Number of Sequences field, specifically:

☐ A "Hard Page Break" code was inserted by the applicant. All occurrences had to be deleted.

☐ Deleted ending stop codon in amino acid sequences and adjusted the "(A)Length:" field accordingly (error due to a PatentIn bug). Sequences corrected: \_\_\_\_\_

☒ Other: Page 19-20, 22 - moved (223) response up one line

Examiner: The above corrections must be communicated to the applicant in the first Office Action. DO NOT send a copy of this form. 3/1/95

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/877,476

DATE: 07/19/2001

TIME: 12:52:07

Input Set : A:\PTO.txt

Output Set: N:\CRF3\07192001\I877476.raw

4 <110> APPLICANT: Jaworski, Jan G.  
5 Blacklock, Brenda J.  
7 <120> TITLE OF INVENTION: FATTY ACID ELONGASE 3-KETOACYL COA  
8 SYNTHASE POLYPEPTIDES  
10 <130> FILE REFERENCE: 07148-108001  
C--> 12 <140> CURRENT APPLICATION NUMBER: US/09/877,476  
C--> 12 <141> CURRENT FILING DATE: 2001-06-08  
12 <150> PRIOR APPLICATION NUMBER: US 60/210,326  
13 <151> PRIOR FILING DATE: 2000-06-08  
15 <160> NUMBER OF SEQ ID NOS: 56  
17 <170> SOFTWARE: FastSEQ for Windows Version 4.0  
19 <210> SEQ ID NO: 1  
20 <211> LENGTH: 1709  
21 <212> TYPE: DNA  
22 <213> ORGANISM: Arabidopsis thaliana  
24 <220> FEATURE:  
25 <221> NAME/KEY: CDS  
26 <222> LOCATION: (1)...(1518)  
28 <400> SEQUENCE: 1  
29 atg acg tcc gtt aac gtt aag ctc ctt tac cgt tac gtc tta acc aac 48  
30 Met Thr Ser Val Asn Val Lys Leu Leu Tyr Arg Tyr Val Leu Thr Asn  
31 1 5 10 15  
33 ttt ttc aac ctc tgt ttg ttc ccg tta acg gcg ttc ctc gcc gga aaa 96  
34 Phe Phe Asn Leu Cys Leu Phe Pro Leu Thr Ala Phe Leu Ala Gly Lys  
35 20 25 30  
37 gcc tct cgg ctt acc ata aac gat ctc cac aac ttc ctt tcc tat ctc 144  
38 Ala Ser Arg Leu Thr Ile Asn Asp Leu His Asn Phe Leu Ser Tyr Leu  
39 35 40 45  
41 caa cac aac ctt ata aca gta act tta ctc ttt gct ttc act gtt ttc 192  
42 Gln His Asn Leu Ile Thr Val Thr Leu Leu Phe Ala Phe Thr Val Phe  
43 50 55 60  
45 ggt ttg gtt ctc tac atc gta acc cga ccc aat ccg gtt tat ctc gtt 240  
46 Gly Leu Val Leu Tyr Ile Val Thr Arg Pro Asn Pro Val Tyr Leu Val  
47 65 70 75 80  
49 gac tac tcg tgt tac ctt cca cca ccg cat ctc aaa gtt agt gtc tct 288  
50 Asp Tyr Ser Cys Tyr Leu Pro Pro Pro His Leu Lys Val Ser Val Ser  
51 85 90 95  
53 aaa gtc atg gat att ttc tac caa ata aga aaa gct gat act tct tca 336  
54 Lys Val Met Asp Ile Phe Tyr Gln Ile Arg Lys Ala Asp Thr Ser Ser  
55 100 105 110  
57 cgg aac gtg gca tgt gat gat ccg tcc tog ctc gat ttc ctg agg aag 384  
58 Arg Asn Val Ala Cys Asp Pro Ser Ser Leu Asp Phe Leu Arg Lys  
59 115 120 125  
61 att caa gag cgt tca ggt cta ggt gat gag acg tac agt cct gag gga 432  
62 Ile Gln Glu Arg Ser Gly Leu Gly Asp Glu Thr Tyr Ser Pro Glu Gly  
63 130 135 140  
65 ctc att cac gta cca ccg cgg aag act ttt gca gcg tca cgt gaa gag 480

RAW SEQUENCE LISTING  
 PATENT APPLICATION: US/09/877,476

DATE: 07/19/2001  
 TIME: 12:52:07

Input Set : A:\PTO.txt

Output Set : N:\CRF3\07192001\I877476.raw

66	Leu	Ile	His	Val	Pro	Arg	Lys	Thr	Phe	Ala	Ala	Ser	Arg	Glu	Glu	
67	145				150				155					160		
69	aca	gag	aag	gtt	atc	atc	ggt	gcg	ctc	gaa	aat	cta	ttc	gag	aac	acc
70	Thr	Glu	Lys	Val	Ile	Ile	Gly	Ala	Leu	Glu	Asn	Leu	Phe	Glu	Asn	Thr
71					165				170					175		
73	aaa	gtt	aac	cct	aga	gag	att	ggt	ata	ctt	gtg	gtg	aac	tca	agc	atg
74	Lys	Val	Asn	Pro	Arg	Glu	Ile	Gly	Ile	Leu	Val	Val	Asn	Ser	Ser	Met
75					180				185					190		
77	ttt	aat	cca	act	cct	tcg	cta	tcc	gct	atg	gtc	gtt	aat	act	ttc	aag
78	Phe	Asn	Pro	Thr	Pro	Ser	Leu	Ser	Ala	Met	Val	Val	Asn	Thr	Phe	Lys
79					195				200					205		
81	ctc	cga	agc	aac	atc	aaa	agc	ttt	aat	cta	gga	gga	atg	ggg	tgt	agt
82	Leu	Arg	Ser	Asn	Ile	Lys	Ser	Phe	Asn	Leu	Gly	Gly	Met	Gly	Cys	Ser
83					210				215					220		
85	gct	ggt	gtt	att	gcc	att	gat	ttg	gct	aaa	gac	ttg	ttg	cat	gtt	cat
86	Ala	Gly	Val	Ile	Ala	Ile	Asp	Leu	Ala	Lys	Asp	Leu	Leu	His	Val	His
87	225				230				235					240		
89	aaa	aac	act	tat	gct	ctt	gtg	gtg	agc	act	gag	aac	atc	aca	caa	ggc
90	Lys	Asn	Thr	Tyr	Ala	Leu	Val	Val	Ser	Thr	Glu	Asn	Ile	Thr	Gln	Gly
91					245				250					255		
93	att	tat	gct	gga	gaa	aat	aga	tca	atg	atg	gtt	agc	aat	tgc	ttg	ttt
94	Ile	Tyr	Ala	Gly	Glu	Asn	Arg	Ser	Met	Met	Val	Ser	Asn	Cys	Leu	Phe
95					260				265					270		
97	cgt	gtt	ggt	ggg	gcc	gcg	att	ttg	ctc	tct	aac	aag	tcg	gga	gac	cgg
98	Arg	Val	Gly	Gly	Ala	Ala	Ile	Leu	Leu	Ser	Asn	Lys	Ser	Gly	Asp	Arg
99					275				280					285		
101	aga	cgg	tcc	aag	tac	aag	cta	gtt	cac	acg	gtc	cga	acg	cat	act	gga
102	Arg	Arg	Ser	Lys	Tyr	Lys	Lys	Leu	Val	His	Thr	Val	Arg	Thr	His	Gly
103					290				295					300		
105	gct	gat	gac	aag	tct	ttt	cga	tgt	gtg	caa	caa	gaa	gac	gat	gag	agc
106	Ala	Asp	Asp	Lys	Ser	Phe	Arg	Cys	Val	Gln	Gln	Glu	Asp	Asp	Glu	Ser
107	305				310				315					320		
109	ggc	aaa	atc	gga	gtt	tgt	ctg	tca	aag	gac	ata	acc	aat	gtt	gcg	ggg
110	Gly	Lys	Ile	Gly	Val	Cys	Leu	Ser	Lys	Asp	Ile	Thr	Asn	Val	Ala	Gly
111					325				330					335		
113	aca	aca	ctt	acg	aaa	aat	ata	gca	aca	ttg	ggt	ccg	ttg	att	ctt	cct
114	Thr	Thr	Leu	Thr	Lys	Asn	Ile	Ala	Thr	Leu	Gly	Pro	Leu	Ile	Leu	Pro
115					340				345					350		
117	tta	agc	gaa	aag	ttt	ctt	ttt	ttc	gct	acc	ttc	gtc	gcc	aag	aaa	ctt
118	Leu	Ser	Glu	Lys	Phe	Leu	Phe	Phe	Ala	Thr	Phe	Val	Ala	Lys	Lys	Leu
119					355				360					365		
121	cta	aag	gat	aaa	atc	aag	cat	tac	tat	gtt	cgg	gat	ttc	aag	ctt	gct
122	Leu	Lys	Asp	Lys	Ile	Lys	His	Tyr	Tyr	Val	Pro	Asp	Phe	Lys	Leu	Ala
123					370				375					380		
125	gtt	gac	cat	ttc	tgt	att	cat	gcc	gga	ggc	aga	gcc	gtg	atc	gat	gag
126	Val	Asp	His	Phe	Cys	Ile	His	Ala	Gly	Gly	Arg	Ala	Val	Ile	Asp	Glu
127	385				390				395					400		
129	cta	gag	aag	aac	tta	gga	cta	tcg	ccg	atc	gat	gtg	gag	gca	tct	aga
130	Leu	Glu	Lys	Asn	Leu	Gly	Leu	Ser	Pro	Ile	Asp	Val	Glu	Ala	Ser	Arg

## RAW SEQUENCE LISTING

DATE: 07/19/2001

PATENT APPLICATION: US/09/877,476

TIME: 12:52:07

Input Set : A:\PTO.txt

Output Set: N:\CRF3\07192001\I877476.raw

```

131          405          410          415
133 tca acg tta cat aga ttt ggg aat act tca tct agc tca att tgg tat      1296
134 Ser Thr Leu His Arg Phe Gly Asn Thr Ser Ser Ser Ser Ile Trp Tyr
135          420          425          430
137 gaa tta gca tac ata gag gca aag gga aga atg aag aaa ggg aat aaa      1344
138 Glu Leu Ala Tyr Ile Glu Ala Lys Gly Arg Met Lys Lys Gly Asn Lys
139          435          440          445
141 gct tgg cag att gct tta gga tca ggg ttt aag tgt aat agt gcg gtt      1392
142 Ala Trp Gln Ile Ala Leu Gly Ser Gly Phe Lys Cys Asn Ser Ala Val
143          450          455          460
145 tgg gtg gct cta cgc aat gtc aag gca tcg gca aat agt cct tgg caa      1440
146 Trp Val Ala Leu Arg Asn Val Lys Ala Ser Ala Asn Ser Pro Trp Gln
147          465          470          475
149 cat tgc atc gat aga tat ccg gtt aaa att gat tct gat ttg tca aag      1488
150 His Cys Ile Asp Arg Tyr Pro Val Lys Ile Asp Ser Asp Leu Ser Lys
151          485          490          495
153 tca aag act cat gtc caa aac ggt cgg tcc taatttgatg tatctgagt      1538
154 Ser Lys Thr His Val Gln Asn Gly Arg Ser
155          500          505
157 coaacgttta ctttgtcttt cctttctttt attggttatg aattagatgt ttactaatgt      1598
158 tctctctttt tctgttataa ataagaagt tcaattcttc ctatagtttc aaacgcgagt      1658
159 ttaagcgttt ctatttaggt ttacatgaat tctttttaca aacctcttt t      1709
161 <210> SEQ ID NO: 2
162 <211> LENGTH: 506
163 <212> TYPE: PRP
164 <213> ORGANISM: Arabidopsis thaliana
166 <400> SEQUENCE: 2
167 Met Thr Ser Val Asn Val Lys Leu Leu Tyr Arg Tyr Val Leu Thr Asn
168 1 5 10 15
169 Phe Phe Asn Leu Cys Leu Phe Pro Leu Thr Ala Phe Leu Ala Gly Lys
170 20 25 30
171 Ala Ser Arg Leu Thr Ile Asn Asp Leu His Asn Phe Leu Ser Tyr Leu
172 35 40 45
173 Gln His Asn Leu Ile Thr Val Thr Leu Leu Phe Ala Phe Thr Val Phe
174 50 55 60
175 Gly Leu Val Leu Tyr Ile Val Thr Arg Pro Asn Pro Val Tyr Leu Val
176 65 70 75 80
177 Asp Tyr Ser Cys Tyr Leu Pro Pro Pro His Leu Lys Val Ser Val Ser
178 85 90 95
179 Lys Val Met Asp Ile Phe Tyr Gln Ile Arg Lys Ala Asp Thr Ser Ser
180 100 105 110
181 Arg Asn Val Ala Cys Asp Asp Pro Ser Ser Leu Asp Phe Leu Arg Lys
182 115 120 125
183 Ile Gln Glu Arg Ser Gly Leu Gly Asp Glu Thr Tyr Ser Pro Glu Gly
184 130 135 140
185 Leu Ile His Val Pro Pro Arg Lys Thr Phe Ala Ala Ser Arg Glu Glu
186 145 150 155 160
187 Thr Glu Lys Val Ile Ile Gly Ala Leu Glu Asn Leu Phe Glu Asn Thr
188 165 170 175

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/877,476

DATE: 07/19/2001

TIME: 12:52:08

Input Set : A:\PTO.txt

Output Set : N:\CRF3\07192001\I877476.raw

```

189 Lys Val Asn Pro Arg Glu Ile Gly Ile Leu Val Val Asn Ser Ser Met
190      180      185      190
191 Phe Asn Pro Thr Pro Ser Leu Ser Ala Met Val Val Asn Thr Phe Lys
192      195      200      205
193 Leu Arg Ser Asn Ile Lys Ser Phe Asn Leu Gly Gly Met Gly Cys Ser
194      210      215      220
195 Ala Gly Val Ile Ala Ile Asp Leu Ala Lys Asp Leu Leu His Val His
196 225      230      235      240
197 Lys Asn Thr Tyr Ala Leu Val Val Ser Thr Glu Asn Ile Thr Gln Gly
198      245      250      255
199 Ile Tyr Ala Gly Glu Asn Arg Ser Met Met Val Ser Asn Cys Leu Phe
200      260      265      270
201 Arg Val Gly Gly Ala Ala Ile Leu Leu Ser Asn Lys Ser Gly Asp Arg
202      275      280      285
203 Arg Arg Ser Lys Tyr Lys Leu Val His Thr Val Arg Thr His Thr Gly
204      290      295      300
205 Ala Asp Asp Lys Ser Phe Arg Cys Val Gln Gln Glu Asp Asp Glu Ser
206 305      310      315      320
207 Gly Lys Ile Gly Val Cys Leu Ser Lys Asp Ile Thr Asn Val Ala Gly
208      325      330      335
209 Thr Thr Leu Thr Lys Asn Ile Ala Thr Leu Gly Pro Leu Ile Leu Pro
210      340      345      350
211 Leu Ser Glu Lys Phe Leu Phe Phe Ala Thr Phe Val Ala Lys Lys Leu
212      355      360      365
213 Leu Lys Asp Lys Ile Lys His Tyr Tyr Val Pro Asp Phe Lys Leu Ala
214      370      375      380
215 Val Asp His Phe Cys Ile His Ala Gly Gly Arg Ala Val Ile Asp Glu
216 385      390      395      400
217 Leu Glu Lys Asn Leu Gly Leu Ser Pro Ile Asp Val Glu Ala Ser Arg
218      405      410      415
219 Ser Thr Leu His Arg Phe Gly Asn Thr Ser Ser Ser Ser Ile Trp Tyr
220      420      425      430
221 Glu Leu Ala Tyr Ile Glu Ala Lys Gly Arg Met Lys Lys Gly Asn Lys
222      435      440      445
223 Ala Trp Gln Ile Ala Leu Gly Ser Gly Phe Lys Cys Asn Ser Ala Val
224      450      455      460
225 Trp Val Ala Leu Arg Asn Val Lys Ala Ser Ala Asn Ser Pro Trp Gln
226 465      470      475      480
227 His Cys Ile Asp Arg Tyr Pro Val Lys Ile Asp Ser Asp Leu Ser Lys
228      485      490      495
229 Ser Lys Thr His Val Gln Asn Gly Arg Ser
230      500      505
232 <210> SEQ ID NO: 3
233 <211> LENGTH: 1524
234 <212> TYPE: DNA
235 <213> ORGANISM: Brassica napus
237 <220> FEATURE:
238 <221> NAME/KEY: CDS
239 <222> LOCATION: (1)...(1521)

```

RAW SEQUENCE LISTING  
 PATENT APPLICATION: US/09/877,476

DATE: 07/19/2001  
 TIME: 12:52:08

Input Set : A:\PTO.txt  
 Output Set: N:\CRF3\07192001\I877476.raw

```

241 <400> SEQUENCE: 3
242 atg acg tcc att aac gta aag ctc ctt tac cat tac gtc ata acc aac 48
243 Met Thr Ser Ile Asn Val Lys Leu Leu Tyr His Tyr Val Ile Thr Asn
244 1 5 10 15
246 ctt ttc aac ctt tgc ttc ttt ccg tta acg gcg atc gtc gcc gga aaa 96
247 Leu Phe Asn Leu Cys Phe Phe Pro Leu Thr Ala Ile Val Ala Gly Lys
248 20 25 30
250 gcc tat cgg ctt acc ata gac gat ctt cac cac tta tac tat tcc tat 144
251 Ala Tyr Arg Leu Thr Ile Asp Asp Leu His His Leu Tyr Tyr Ser Tyr
252 35 40 45
254 ctc caa cac aac ctc ata acc atc gct cca ctc ttt gcc ttc acc gtt 192
255 Leu Gln His Asn Leu Ile Thr Ile Ala Pro Leu Phe Ala Phe Thr Val
256 50 55 60
258 ttc ggt tgc gtt ctc tac atc gca acc cgg ccc aaa ccg gtt tac ctc 240
259 Phe Gly Ser Val Leu Tyr Ile Ala Thr Arg Pro Lys Pro Val Tyr Leu
260 65 70 75 80
262 gtt gag tac tca tgc tac ctt cca cca acg cat tgt aga tca agt atc 288
263 Val Glu Tyr Ser Cys Tyr Leu Pro Pro Thr His Cys Arg Ser Ser Ile
264 85 90 95
266 tcc aag gtc atg gat atc ttt tat caa gta aga aaa gct gat cct tct 336
267 Ser Lys Val Met Asp Ile Phe Tyr Gln Val Arg Lys Ala Asp Pro Ser
268 100 105 110
270 cgg aac ggc acg tgc gat gac tgc tgc tgg ctt gac ttc ttg agg aag 384
271 Arg Asn Gly Thr Cys Asp Asp Ser Ser Trp Leu Asp Phe Leu Arg Lys
272 115 120 125
274 att caa gaa cgt tca ggt cta ggc gat gaa act cac ggg ccc gag ggg 432
275 Ile Gln Glu Arg Ser Gly Leu Gly Asp Glu Thr His Gly Pro Glu Gly
276 130 135 140
278 ctg ctt cag gtc cct ccc cgg aag act ttt gcg gcg gcg cgt gaa gag 480
279 Leu Leu Gln Val Pro Pro Arg Lys Thr Phe Ala Ala Ala Arg Glu Glu
280 145 150 155 160
282 acg gag caa gtt atc att ggt gcg cta gaa aat cta ttc aag aac acc 528
283 Thr Glu Gln Val Ile Ile Gly Ala Leu Glu Asn Leu Phe Lys Asn Thr
284 165 170 175
286 aac gtt aac cct aaa gat ata ggt ata ctt gtg gtg aac tca agc atg 576
287 Asn Val Asn Pro Lys Asp Ile Gly Ile Leu Val Val Asn Ser Ser Met
288 180 185 190
290 ttt aat cca act cca tgc ctc tcc gcg atg gtc gtt aac act ttc aag 624
291 Phe Asn Pro Thr Pro Ser Leu Ser Ala Met Val Val Asn Thr Phe Lys
292 195 200 205
294 ctc cga agc aac gta aga agc ttt aac ctt ggt ggc atg ggt tgt agt 672
295 Leu Arg Ser Asn Val Arg Ser Phe Asn Leu Gly Gly Met Gly Cys Ser
296 210 215 220
298 gcc ggc gtt ata gcc att gat cta gca aag gac ttg ttg cat gtc cat 720
299 Ala Gly Val Ile Ala Ile Asp Leu Ala Lys Asp Leu Leu His Val His
300 225 230 235 240
302 aaa aat acg tat gct ctt gtg gtg agc aca gag aac atc act tat aac 768
303 Lys Asn Thr Tyr Ala Leu Val Val Ser Thr Glu Asn Ile Thr Tyr Asn
304 245 250 255

```

Use of n and/or Xaa has been detected in the Sequence Listing.  
 Review the Sequence Listing to insure a corresponding  
 explanation is presented in the <220> to <223> fields of  
 each sequence using n or Xaa.

**VERIFICATION SUMMARY**

PATENT APPLICATION: US/09/877,476

DATE: 07/19/2001

TIME: 12:52:09

Input Set : A:\PTO.txt

Output Set: N:\CRF3\07192001\I877476.raw

L:12 M:270 C: Current Application Number differs, Replaced Current Application No  
 L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
 L:779 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7  
 L:868 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8  
 L:2782 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25  
 L:2863 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:26  
 L:3224 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29  
 L:3305 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30

OIPE

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/877,476

DATE: 06/27/2001

TIME: 18:39:57

Input Set : A:\07148-108001.TXT

Output Set: N:\CRF3\06272001\I877476.raw

Does Not Comply  
Corrected Diskette Needed

```

4 <110> APPLICANT: Jaworski, Jan G.
5 Blacklock, Brenda J.
7 <120> TITLE OF INVENTION: FATTY ACID ELONGASE 3-KETOACYL COA
8 SYNTHASE POLYPEPTIDES
10 <130> FILE REFERENCE: 07148-108001
C--> 12 <140> CURRENT APPLICATION NUMBER: US/09/877,476
C--> 12 <141> CURRENT FILING DATE: 2001-06-08
12 <150> PRIOR APPLICATION NUMBER: US 60/210,326
13 <151> PRIOR FILING DATE: 2000-06-08
15 <160> NUMBER OF SEQ ID NOS: 56
17 <170> SOFTWARE: FastSEQ for Windows Version 4.0
19 <210> SEQ ID NO: 1
20 <211> LENGTH: 1709
21 <212> TYPE: DNA
22 <213> ORGANISM: Arabidopsis thaliana
24 <220> FEATURE:
25 <221> NAME/KEY: CDS
26 <222> LOCATION: (1)...(1518)
28 <400> SEQUENCE: 1
29 atg acg tcc gtt aac gtt aag ctc ctt tac cgt tac gtc tta acc aac 48
30 Met Thr Ser Val Asn Val Lys Leu Leu Tyr Arg Tyr Val Leu Thr Asn
31 1 5 10 15
33 ttt ttc aac ctc tgt ttg ttc ccg tta acg gcg ttc ctc gcc gga aaa 96
34 Phe Phe Asn Leu Cys Leu Phe Pro Leu Thr Ala Phe Leu Ala Gly Lys
35 20 25 30
37 gcc tct cgg ctt acc ata aac gat ctc cac aac ttc ctt tcc tat ctc 144
38 Ala Ser Arg Leu Thr Ile Asn Asp Leu His Asn Phe Leu Ser Tyr Leu
39 35 40 45
41 caa cac aac ctt ata aca gta act tta ctc ttt gct ttc act gtt ttc 192
42 Gln His Asn Leu Ile Thr Val Thr Leu Leu Phe Ala Phe Thr Val Phe
43 50 55 60
45 ggt ttg gtt ctc tac atc gta acc cga ccc aat ccg gtt tat ctc gtt 240
46 Gly Leu Val Leu Tyr Ile Val Thr Arg Pro Asn Pro Val Tyr Leu Val
47 65 70 75 80
49 gac tac tcg tgt tac ctt cca cca ccg cat ctc aaa gtt agt gtc tct 288
50 Asp Tyr Ser Cys Tyr Leu Pro Pro Pro His Leu Lys Val Ser Val Ser
51 85 90 95
53 aaa gtc atg gat att ttc tac caa ata aga aaa gct gat act tct tca 336
54 Lys Val Met Asp Ile Phe Tyr Gln Ile Arg Lys Ala Asp Thr Ser Ser
55 100 105 110
57 cgg aac gtg gca tgt gat gat ccg tcc tcg ctc gat ttc ctg agg aag 384
58 Arg Asn Val Ala Cys Asp Asp Pro Ser Ser Leu Asp Phe Leu Arg Lys
59 115 120 125
61 att caa gag cgt tca ggt cta ggt gat gag acg tac agt cct gag gga 432
62 Ile Gln Glu Arg Ser Gly Leu Gly Asp Glu Thr Tyr Ser Pro Glu Gly
63 130 135 140
65 ctc att cac gta cca ccg cgg aag act ttt gca gcg tca cgt gaa gag 480

```



## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/877,476

DATE: 06/27/2001

TIME: 18:39:57

Input Set : A:\07148-108001.TXT

Output Set: N:\CRF3\06272001\I877476.raw

66	Leu	Ile	His	Val	Pro	Pro	Arg	Lys	Thr	Phe	Ala	Ala	Ser	Arg	Glu	Glu	
67	145					150				155						160	
69	aca	gag	aag	ggt	atc	atc	ggg	gag	ctc	gaa	aat	cta	ttc	gag	aac	acc	528
70	Thr	Glu	Lys	Val	Ile	Ile	Gly	Ala	Leu	Glu	Asn	Leu	Phe	Glu	Asn	Thr	
71				165						170					175		
73	aaa	ggt	aac	cct	aga	gag	att	ggg	ata	ctt	gtg	gtg	aac	tca	agc	atg	576
74	Lys	Val	Asn	Pro	Arg	Glu	Ile	Gly	Ile	Leu	Val	Val	Asn	Ser	Ser	Met	
75				180					185					190			
77	ttt	aat	cca	act	cct	tcg	cta	tcc	gct	atg	gtc	ggt	aat	act	ttc	aag	624
78	Phe	Asn	Pro	Thr	Pro	Ser	Leu	Ser	Ala	Met	Val	Val	Asn	Thr	Phe	Lys	
79			195					200					205				
81	ctc	cga	agc	aac	atc	aaa	agc	ttt	aat	cta	gga	gga	atg	ggg	tgt	agt	672
82	Leu	Arg	Ser	Asn	Ile	Lys	Ser	Phe	Asn	Leu	Gly	Gly	Met	Gly	Cys	Ser	
83		210					215					220					
85	gct	ggg	ggt	att	gcc	att	gat	ttg	gct	aaa	gac	ttg	ttg	cat	ggt	cat	720
86	Ala	Gly	Val	Ile	Ala	Ile	Asp	Leu	Ala	Lys	Asp	Leu	Leu	His	Val	His	
87	225					230				235					240		
89	aaa	aac	act	tat	gct	ctt	gtg	gtg	agc	act	gag	aac	atc	aca	caa	ggc	768
90	Lys	Asn	Thr	Tyr	Ala	Leu	Val	Val	Ser	Thr	Glu	Asn	Ile	Thr	Gln	Gly	
91				245					250					255			
93	att	tat	gct	gga	gaa	aat	aga	tca	atg	atg	gtt	agc	aat	tgc	ttg	ttt	816
94	Ile	Tyr	Ala	Gly	Glu	Asn	Arg	Ser	Met	Met	Val	Ser	Asn	Cys	Leu	Phe	
95			260					265					270				
97	cgt	ggt	ggg	ggc	gag	att	ttg	ctc	tct	aac	aag	tcg	gga	gac	cgg		864
98	Arg	Val	Gly	Gly	Ala	Ala	Ile	Leu	Ser	Asn	Lys	Ser	Gly	Asp	Arg		
99		275					280					285					
101	aga	cgg	tcc	aag	tac	aag	cta	ggt	cac	acg	gtc	cga	acg	cat	act	gga	912
102	Arg	Arg	Ser	Lys	Tyr	Lys	Leu	Val	His	Thr	Val	Arg	Thr	His	Thr	Gly	
103		290					295					300					
105	gct	gat	gac	aag	tct	ttt	cga	tgt	gtg	caa	caa	gaa	gac	gat	gag	agc	960
106	Ala	Asp	Asp	Lys	Ser	Phe	Arg	Cys	Val	Gln	Gln	Glu	Asp	Asp	Glu	Ser	
107	305					310					315				320		
109	ggc	aaa	atc	gga	ggt	tgt	ctg	tca	aag	gac	ata	acc	aat	ggt	gcg	ggg	1008
110	Gly	Lys	Ile	Gly	Val	Cys	Leu	Ser	Lys	Asp	Ile	Thr	Asn	Val	Ala	Gly	
111				325					330					335			
113	aca	aca	ctt	acg	aaa	aat	ata	gca	aca	ttg	ggg	ccg	ttg	att	ctt	cct	1056
114	Thr	Thr	Leu	Thr	Lys	Asn	Ile	Ala	Thr	Leu	Gly	Pro	Leu	Ile	Leu	Pro	
115			340					345					350				
117	tta	agc	gaa	aag	ttt	ctt	ttt	ttc	gct	acc	ttc	gtc	gcc	aag	aaa	ctt	1104
118	Leu	Ser	Glu	Lys	Phe	Leu	Phe	Phe	Ala	Thr	Phe	Val	Ala	Lys	Lys	Leu	
119		355					360					365					
121	cta	aag	gat	aaa	atc	aag	cat	tac	tat	ggt	ccg	gat	ttc	aag	ctt	gct	1152
122	Leu	Lys	Asp	Lys	Ile	Lys	His	Tyr	Tyr	Val	Pro	Asp	Phe	Lys	Leu	Ala	
123		370					375					380					
125	ggt	gac	cat	ttc	tgt	att	cat	gcc	gga	ggc	aga	gcc	gtg	atc	gat	gag	1200
126	Val	Asp	His	Phe	Cys	Ile	His	Ala	Gly	Gly	Arg	Ala	Val	Ile	Asp	Glu	
127	385					390					395				400		
129	cta	gag	aag	aac	tta	gga	cta	tcg	ccg	atc	gat	gtg	gag	gca	tct	aga	1248
130	Leu	Glu	Lys	Asn	Leu	Gly	Leu	Ser	Pro	Ile	Asp	Val	Glu	Ala	Ser	Arg	

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/877,476

DATE: 06/27/2001

TIME: 18:39:57

Input Set : A:\07148-108001.TXT

Output Set: N:\CRF3\06272001\I877476.raw

```

131          405          410          415
133 tca acg tta cat aga ttt ggg aat act tca tct agc tca att tgg tat      1296
134 Ser Thr Leu His Arg Phe Gly Asn Thr Ser Ser Ser Ser Ile Trp Tyr
135          420          425          430
137 gaa tta gca tac ata gag gca aag gga aga atg aag aaa ggg aat aaa      1344
138 Glu Leu Ala Tyr Ile Glu Ala Lys Gly Arg Met Lys Lys Gly Asn Lys
139          435          440          445
141 gct tgg cag att gct tta gga tca ggg ttt aag tgt aat agt gcg gtt      1392
142 Ala Trp Gln Ile Ala Leu Gly Ser Gly Phe Lys Cys Asn Ser Ala Val
143          450          455          460
145 tgg gtg gct cta cgc aat gtc aag gca tcg gca aat agt cct tgg caa      1440
146 Trp Val Ala Leu Arg Asn Val Lys Ala Ser Ala Asn Ser Pro Trp Gln
147 465          470          475          480
149 cat tgc atc gat aga tat ccg gtt aaa att gat tct gat ttg tca aag      1488
150 His Cys Ile Asp Arg Tyr Pro Val Lys Ile Asp Ser Asp Leu Ser Lys
151          485          490          495
153 tca aag act cat gtc caa aac ggt cgg tcc taatttgatg tatctgagtg      1538
154 Ser Lys Thr His Val Gln Asn Gly Arg Ser
155          500          505
157 ccaacgttta ctttgtcttt cctttctttt attggttatg aattagatgt ttactaatgt      1598
158 tctctctcttt ttogttataa ataaagaagt tcaattcttc ctatagtttc aaacgcgatt      1658
159 ttaagcggtt ctatttaggt ttacatgaat ttcttttaca aaccatcttt t      1709
161 <210> SEQ ID NO: 2
162 <211> LENGTH: 506
163 <212> TYPE: PRT
164 <213> ORGANISM: Arabidopsis thaliana
166 <400> SEQUENCE: 2
167 Met Thr Ser Val Asn Val Lys Leu Leu Tyr Arg Tyr Val Leu Thr Asn
168 1 5 10 15
169 Phe Phe Asn Leu Cys Leu Phe Pro Leu Thr Ala Phe Leu Ala Gly Lys
170 20 25 30
171 Ala Ser Arg Leu Thr Ile Asn Asp Leu His Asn Phe Leu Ser Tyr Leu
172 35 40 45
173 Gln His Asn Leu Ile Thr Val Thr Leu Leu Phe Ala Phe Thr Val Phe
174 50 55 60
175 Gly Leu Val Leu Tyr Ile Val Thr Arg Pro Asn Pro Val Tyr Leu Val
176 65 70 75 80
177 Asp Tyr Ser Cys Tyr Leu Pro Pro Pro His Leu Lys Val Ser Val Ser
178 85 90 95
179 Lys Val Met Asp Ile Phe Tyr Gln Ile Arg Lys Ala Asp Thr Ser Ser
180 100 105 110
181 Arg Asn Val Ala Cys Asp Asp Pro Ser Ser Leu Asp Phe Leu Arg Lys
182 115 120 125
183 Ile Gln Glu Arg Ser Gly Leu Gly Asp Glu Thr Tyr Ser Pro Glu Gly
184 130 135 140
185 Leu Ile His Val Pro Pro Arg Lys Thr Phe Ala Ala Ser Arg Glu Glu
186 145 150 155 160
187 Thr Glu Lys Val Ile Ile Gly Ala Leu Glu Asn Leu Phe Glu Asn Thr
188 165 170 175

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/877,476

DATE: 06/27/2001

TIME: 18:39:57

Input Set : A:\07148-108001.TXT

Output Set: N:\CRF3\06272001\I877476.raw

```

189 Lys Val Asn Pro Arg Glu Ile Gly Ile Leu Val Val Asn Ser Ser Met
190      180      185      190
191 Phe Asn Pro Thr Pro Ser Leu Ser Ala Met Val Val Asn Thr Phe Lys
192      195      200      205
193 Leu Arg Ser Asn Ile Lys Ser Phe Asn Leu Gly Gly Met Gly Cys Ser
194      210      215      220
195 Ala Gly Val Ile Ala Ile Asp Leu Ala Lys Asp Leu Leu His Val His
196 225      230      235      240
197 Lys Asn Thr Tyr Ala Leu Val Val Ser Thr Glu Asn Ile Thr Gln Gly
198      245      250      255
199 Ile Tyr Ala Gly Glu Asn Arg Ser Met Met Val Ser Asn Cys Leu Phe
200      260      265      270
201 Arg Val Gly Gly Ala Ala Ile Leu Leu Ser Asn Lys Ser Gly Asp Arg
202      275      280      285
203 Arg Arg Ser Lys Tyr Lys Leu Val His Thr Val Arg Thr His Thr Gly
204      290      295      300
205 Ala Asp Asp Lys Ser Phe Arg Cys Val Gln Gln Glu Asp Asp Glu Ser
206 305      310      315      320
207 Gly Lys Ile Gly Val Cys Leu Ser Lys Asp Ile Thr Asn Val Ala Gly
208      325      330      335
209 Thr Thr Leu Thr Lys Asn Ile Ala Thr Leu Gly Pro Leu Ile Leu Pro
210      340      345      350
211 Leu Ser Glu Lys Phe Leu Phe Phe Ala Thr Phe Val Ala Lys Lys Leu
212      355      360      365
213 Leu Lys Asp Lys Ile Lys His Tyr Tyr Val Pro Asp Phe Lys Leu Ala
214      370      375      380
215 Val Asp His Phe Cys Ile His Ala Gly Gly Arg Ala Val Ile Asp Glu
216 385      390      395      400
217 Leu Glu Lys Asn Leu Gly Leu Ser Pro Ile Asp Val Glu Ala Ser Arg
218      405      410      415
219 Ser Thr Leu His Arg Phe Gly Asn Thr Ser Ser Ser Ile Trp Tyr
220      420      425      430
221 Glu Leu Ala Tyr Ile Glu Ala Lys Gly Arg Met Lys Lys Gly Asn Lys
222      435      440      445
223 Ala Trp Gln Ile Ala Leu Gly Ser Gly Phe Lys Cys Asn Ser Ala Val
224      450      455      460
225 Trp Val Ala Leu Arg Asn Val Lys Ala Ser Ala Asn Ser Pro Trp Gln
226 465      470      475      480
227 His Cys Ile Asp Arg Tyr Pro Val Lys Ile Asp Ser Asp Leu Ser Lys
228      485      490      495
229 Ser Lys Thr His Val Gln Asn Gly Arg Ser
230      500      505
232 <210> SEQ ID NO: 3
233 <211> LENGTH: 1524
234 <212> TYPE: DNA
235 <213> ORGANISM: Brassica napus
237 <220> FEATURE:
238 <221> NAME/KEY: CDS
239 <222> LOCATION: (1)...(1521)

```

## RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/877,476

DATE: 06/27/2001

TIME: 18:39:57

Input Set : A:\07148-108001.TXT

Output Set : N:\CRF3\06272001\I877476.raw

```

241 <400> SEQUENCE: 3
242 atg acg tcc att aac gta aag ctc ctt tac cat tac gtc ata acc aac      48
243 Met Thr Ser Ile Asn Val Lys Leu Leu Tyr His Tyr Val Ile Thr Asn
244 1 5 10 15
246 ctt ttc aac ctt tgc ttc ttt cgg tta acg gcg atc gtc gcc gga aaa      96
247 Leu Phe Asn Leu Cys Phe Phe Pro Leu Thr Ala Ile Val Ala Gly Lys
248 20 25 30
250 gcc tat cgg ctt acc ata gac gat ctt cac cac tta tac tat tcc tat      144
251 Ala Tyr Arg Leu Thr Ile Asp Asp Leu His His Leu Tyr Tyr Ser Tyr
252 35 40 45
254 ctc caa cac aac ctc ata acc atc gct cca ctc ttt gcc ttc acc gtt      192
255 Leu Gln His Asn Leu Ile Thr Ile Ala Pro Leu Phe Ala Phe Thr Val
256 50 55 60
258 ttc ggt tcg gtt ctc tac atc gca acc cgg ccc aaa cgg gtt tac ctc      240
259 Phe Gly Ser Val Leu Tyr Ile Ala Thr Arg Pro Lys Pro Val Tyr Leu
260 65 70 75 80
262 gtt gag tac tca tgc tac ctt cca cca acg cat tgt aga tca agt atc      288
263 Val Glu Tyr Ser Cys Tyr Leu Pro Pro Thr His Cys Arg Ser Ser Ile
264 85 90 95
266 tcc aag gtc atg gat atc ttt tat caa gta aga aaa gct gat cct tct      336
267 Ser Lys Val Met Asp Ile Phe Tyr Gln Val Arg Lys Ala Asp Pro Ser
268 100 105 110
270 cgg aac ggc acg tgc gat gac tcg tcg tgg ctt gac ttc ttg agg aag      384
271 Arg Asn Gly Thr Cys Asp Asp Ser Ser Trp Leu Asp Phe Leu Arg Lys
272 115 120 125
274 att caa gaa cgt tca ggt cta ggc gat gaa act cac ggg ccc gag ggg      432
275 Ile Gln Glu Arg Ser Gly Leu Gly Asp Glu Thr His Gly Pro Glu Gly
276 130 135 140
278 ctg ctt cag gtc cct ccc cgg aag act ttt gcg gcg gcg cgt gaa gag      480
279 Leu Leu Gln Val Pro Pro Arg Lys Thr Phe Ala Ala Ala Arg Glu Glu
280 145 150 155 160
282 acg gag caa gtt atc att ggt gcg cta gaa aat cta ttc aag aac acc      528
283 Thr Glu Gln Val Ile Ile Gly Ala Leu Glu Asn Leu Phe Lys Asn Thr
284 165 170 175
286 aac gtt aac cct aaa gat ata ggt ata ctt gtg gtg aac tca agc atg      576
287 Asn Val Asn Pro Lys Asp Ile Gly Ile Leu Val Val Asn Ser Ser Met
288 180 185 190
290 ttt aat cca act cca tcg ctc tcc gcg atg gtc gtt aac act ttc aag      624
291 Phe Asn Pro Thr Pro Ser Leu Ser Ala Met Val Val Asn Thr Phe Lys
292 195 200 205
294 ctc cga agc aac gta aga agc ttt aac ctt ggt gcc atg ggt tgt agt      672
295 Leu Arg Ser Asn Val Arg Ser Phe Asn Leu Gly Gly Met Gly Cys Ser
296 210 215 220
298 gcc ggc gtt ata gcc att gat cta gca aag gac ttg ttg cat gtc cat      720
299 Ala Gly Val Ile Ala Ile Asp Leu Ala Lys Asp Leu Leu His Val His
300 225 230 235 240
302 aaa aat acg tat gct ctt gtg gtg agc aca gag aac atc act tat aac      768
303 Lys Asn Thr Tyr Ala Leu Val Val Ser Thr Glu Asn Ile Thr Tyr Asn
304 245 250 255

```

## VERIFICATION SUMMARY

PATENT APPLICATION: US/09/877,476

DATE: 06/27/2001

TIME: 18:39:58

Input Set : A:\07148-108001.TXT

Output Set: N:\CRF3\06272001\I877476.raw

L:12 M:270 C: Current Application Number differs, Replaced Current Application No  
L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date  
L:779 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7  
L:868 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:8  
L:1992 M:259 W: Allowed number of lines exceeded, <223> Other Information:  
L:2137 M:259 W: Allowed number of lines exceeded, <223> Other Information:  
L:2359 M:259 W: Allowed number of lines exceeded, <223> Other Information:  
L:2785 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:25  
L:2866 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:26  
L:3227 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:29  
L:3308 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:30